U.S. Department of Energy
Office of River Protection
P.O. Box 450
Richland, Washington 99352

02-OSR-0377

Mr. R. F. Naventi, Project Manager
Bechtel National, Inc.
3000 George Washington Way
Richland, Washington 99352

Dear Mr. Naventi:

CONTRACT NO. DE-AC27-01RV14136 – APPROVAL OF BECHTEL NATIONAL, INC. (BNI) AUTHORIZATION BASIS CHANGE NOTICE (ABCN) 24590-WTP-ABCN-ESH-02-003, REVISION 0, "TAILORING OF IEEE STANDARDS FOR ADDITION TO SAFETY REQUIREMENTS DOCUMENT (SRD), APPENDIX C"

References:

1. BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Transmitted for Approval: Contract Deliverable 'Revised Standards Approval Package – Update' and Associated Authorization Basis Change Notices in Support of the 'SRD Standards Approval Package Submittal'," CCN: 027635, dated February 19, 2002.

2. ORP letter from R. C. Barr to R. F. Naventi, BNI, "Questions on the Standards Approval Package – Update and Revision 1 to Associated Authorization Basis Change Notices in Support of the 'SRD Standards Approval Package Submittal'," 02-OSR-0168, dated April 23, 2002.

3. BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Closeout Comments on Low Activity Waste Construction Authorization Requests," CCN: 035137, dated July 10, 2002.

The U.S. Department of Energy, Office of River Protection (ORP), has reviewed ABCN 24590-WTP-ABCN-ESH-02-003 submitted on February 19, 2002 (Reference 1).

During a review, several questions were developed and, in Reference 2, BNI was requested to respond to those questions. Additional changes to the ABCN were submitted on July 10, 2002 (Reference 3). These additional changes also were evaluated as part of the review.

In ABCN 24590-WTP-ABCN-ESH-02-003, BNI proposed changes to the SRD relating to Implementing Codes and Standards for electrical system safety criteria. Specifically, the proposed changes consist of tailoring of Institute of Electrical and Electronic Engineers, Inc. (IEEE) 308-1991, IEEE 384-1992, IEEE 338-1987, IEEE 628-1987, IEEE 323-1983, IEEE 344-1987 and IEEE 379-1994 in Appendix C of the SRD for application to the waste treatment plant.

Based upon an evaluation of the changes proposed in Reference 1, and those additional changes proposed in Reference 3, in response to questions, ORP has found the changes acceptable, and has concluded that there is reasonable assurance that the health and safety of the public and the workers, and the environment will not be affected adversely by those changes, and that they comply with applicable laws, regulations, and River Protection Project Waste Treatment Plant contractual requirements. Attached is the Safety Evaluation Report (SER) for the proposed changes. Because additional changes were proposed in BNI's response to questions, incorporation of the additional changes is a condition of acceptance of the ABCN, as discussed in the attached SER.

As part of the amendment implementation process, please submit within 14 days of receipt of this letter the revised pages of the SRD, identifying all revisions to date. This amendment is effective immediately and shall be fully implemented within 30 days; i.e., the provisions of the amendment may be used immediately; within 30 days, controlled copies of the SRD and subordinate documents must be modified to reflect the changes associated with this amendment.

If you have any questions, please contact me, or your staff may call Dr. Walter Pasciak, Office of Safety Regulation, (509) 373-9189.

Sincerely,

Roy J. Schepens
Manager

OSR:WJP

Attachment

**Safety Evaluation Report (SER)
of Proposed Authorization Basis Change Notices
24590-WTP-ABCN-ESH-02-003, Revision 0
for the River Protection Project-Waste Treatment Plant (RPP-WTP)**

1.0 INTRODUCTION

The River Protection Project-Waste Treatment Plant (RPP-WTP) authorization basis is the composite of information, provided by the Contractor in response to radiological, nuclear, and process safety requirements, that is the basis on which the Office of River Protection (ORP), Office of Safety Regulation (OSR), Safety Regulation Official grants permission to perform regulated activities. The authorization basis includes that information requested by the Contractor for inclusion in the authorization basis and subsequently accepted by ORP. The authorization basis for the RPP-WTP includes the Safety Requirements Document (SRD). The SRD contains the approved set of radiological, nuclear and process safety standards and requirements, which if implemented, provide adequate protection of workers, the public, and the environment against the hazards associated with the operation of the facility. By letter dated February 19, 2002, Bechtel National, Inc., (the Contractor) submitted proposed changes to the SRD.[1] This SER documents OSR's evaluation of the changes proposed by the Contractor contained in ABCN: 24590-WTP-ABCN-ESH-02-003, Rev. 0.

2.0 Background

The SRD contains the set of radiological, nuclear, and process safety standards necessary to ensure adequate protection of the health and safety of workers, co-located workers, the public, and the environment from radiological, nuclear, and process hazards. The SRD standards are developed via an iterative process. Included in the development process is a continuing review of industry practices, particularly those referenced in the SRD, and review of the results of the process hazards and accident analyses as they evolve with the design of the facility for potential impacts on the SRD standards used to ensure protection of the public, workers, and the environment.

In ABCN 24590-WTP-ABCN-ESH-02-003, the Contractor has proposed changes to the SRD relating to Implementing Codes and Standards relating to electrical system safety criteria. Specifically, the proposed changes consist of tailoring of IEEE [Institute of Electrical and Electronic Engineers, Inc.] 308-1991, IEEE 384-1992, IEEE 338-1987, IEEE 628-1987, IEEE 323-1983, IEEE 344-1987 and IEEE 379-1994 for application to the WTP.

[1] BNI letter from A. R. Veirup to M. Barrett, DOE, "Transmitted for Approval: Contract Deliverable Revised Standards Approval Package – Update and Associated Authorization Basis Change Notices in Support of the SRD Standards Approval Package Submittal," CCN: 027635, dated February 19, 2002.

3.0 EVALUATION

3.1 Proposed changes to SRD, Volume II, Appendix B, section 6.5: Show deletion of tailored IEEE 379-1994 from this section and add a reference to the section in Appendix C where this tailored standard is inserted.

Evaluation (acceptable): This revision is acceptable because relocation of the tailored standard adds clarity.

3.2 Proposed changes to SRD, Volume II, Appendix C: Addition of a proposed new section, "x.0 Implementation of Class 1E, IEEE standards.

3.2.1 Proposed change: Introduction section. This section provides introductory and explanatory text regarding IEEE standards designated implementing standards within the SRD.

Evaluation (acceptable): The change is acceptable because it provides correct explanatory text.

3.2.2 Proposed change: Section titled "Implementing standards for Class 1E systems and equipment." This section lists the specific IEEE standards applicable to the project and gives some general information as to how equipment is classified.

Evaluation (conditionally acceptable): Except for the second to last paragraph of this section, the proposed change is acceptable because it accurately describes the implementing standards for Class 1E systems and equipment. The second to last paragraph is not acceptable because it states that the primary safety classifications for the RPP-WTP are only SDC and SDS systems, thereby excluding other ITS systems that are neither SDC nor SDS. BNI staff requested to delete the second to last paragraph in a telephone communication with OSR staff.[2] OSR staff agreed to this approach as the second to last paragraph does not provide essential information. This proposed change is acceptable on the condition that the second to last paragraph is not included in the proposed change.

3.3 Proposed changes to SRD, Volume II, Appendix C: Addition of a proposed new section, "x.0 IEEE-308, Criteria For Class 1E Power Systems for Nuclear Power Generating Stations," "RPP-WTP Specific Tailoring." "The following tailoring of IEEE-308 is required for use by the RPP-WTP project as an implementing standard for the SDC/SDS electrical power system design."

3.3.1 Proposed Change: Pages 1-21, All Sections Clarification of Nuclear Power Generating Station Terminology: The term “Standby Generator” in the Standard is synonymous with “Emergency Generator” in the RPP-WTP and the term “Control Room” in the Standard is synonymous with “Respective facility control room” in the RPP-WTP."

[2] Telephone communication between K. Gibson, BNI, and W. Pasciak, OSR, on August 7, 2002.

Evaluation (acceptable): The term "Standby Generator" in the Standard is synonymous with "Emergency Generator" in the RPP-WTP" is acceptable because the Standby Generators on the RPP-WTP are not classified as SDC (1E) while the Emergency Generators are classified as SDC (1E). The term "Control Room" in the Standard is synonymous with "Respective facility control room."

3.3.2 Proposed change: "Pages 1-21, All Sections Nuclear Power Generating Station Terminology Not Applicable to the RPP-WTP. The following terminology is not applicable to the RPP-WTP and can be disregarded when encountered in IEEE-308:

- Multi-unit, multi-unit stations or multi-unit nuclear power generating stations
- Reactor, reactor coolant pressure boundary, reactor trip system, or reactor protection system
-
- Fuel cladding."

Evaluation (acceptable): This revision is acceptable because the terminology is not applicable to the RPP-WTP and can be disregarded when encountered in IEEE-308.

3.3.3 Proposed change: "Pages 4-5, Section 3.0 References," The following reference standards (and respective footnotes) do not apply for the RPP-WTP":

3.3.3.1 Proposed change: C.F.R. (Code of Federal Regulations), Title 10: Energy, Part 100, published by Office of the Federal Register, 1992. (Reactor Site Criteria).

Evaluation (acceptable): The revision to delete the reference to 10 CFR 100 is acceptable because it contains radiation dose criteria and seismic criteria for Nuclear Power Generating Stations and is not applicable to the RPP-WTP project. The applicable criteria for RPP-WTP is found in 24590-WTP-SRD-ESH-01-001-02, Safety Requirements Document (SRD) Volume II, Safety Criteria 2.0-1 for radiological dose and 2.0-2 for chemical hazards. The applicable seismic criteria are contained in 24590-WTP-SRD-ESH-01-001-02, Safety Requirements Document (SRD) Volume II, in section 4.1 General Design, Safety Criterion 4.1-3 and 4.1-4. These Safety Criterion define Seismic Classes (SC) I, II and III and provide seismic loads and source documents.

3.3.3.2 Proposed change: IEEE Std-317-1983 (reaff 1988), IEEE Standard for Electric Penetration Assemblies in Containment structures for Nuclear Power Generating Stations, (ANSI).

Evaluation (acceptable): The revision is acceptable because IEEE Std-317-1983 (reaff 1988), IEEE Standard for Electric Penetration Assemblies in Containment structures for Nuclear Power Generating Stations, (ANSI) are not applicable to these non-reactor nuclear facilities.

3.3.3.3 Proposed change: IEEE Std-415-1986, IEEE Guide for Planning of Pre-Operational Testing Programs for Class 1E Power Systems for Nuclear Power Generating Stations.

Evaluation (acceptable): The revision is acceptable because the IEEE standards committee has withdrawn IEEE Std 415-1986, *IEEE Guide for Planning of Pre-Operational Testing Programs for Class 1E Power Systems for Nuclear Power Generating Stations* and the relevant scope is covered by the SRD *Ad Hoc Implementing Standard for Startup.*

3.3.3.4 Proposed change: IEEE Std-494-1974 (reaff 1990), IEEE Standard Method for Identification of Documents Related to Class 1E Equipment and Systems for Nuclear Power Generating Stations.

Evaluation (conditionally acceptable): The revision is acceptable because the IEEE standards committee has withdrawn IEEE Std 494-1974 (reaff 1990), *IEEE Standard Method for Identification of Documents Related to Class 1E Equipment and Systems for Nuclear Power Generating Stations.* In the justification provided for this change, the Contractor stated that procedures for identification of documents related to SDC/SDS electrical equipment will be developed for application to the RPP-WTP project. This proposed change is acceptable based on the commitment to develop procedures for the identification of documents related to Class 1E equipment.

3.3.3.5 Proposed change: IEEE Std-603-1991, IEEE Criteria for Safety Systems for Nuclear Power Generating Stations.

Evaluation (acceptable): The revision is acceptable because the IEEE standard IEEE Std 603-1991, IEEE Criteria for Safety Systems for Nuclear Power Generating Stations has been replaced by ANSI/ISA-S84.01-1996 via a separate change document, 24590-WTP-ABCN-ESH-01-027.

3.3.3.6 Proposed change (withdrawn): The proposed change is to delete reference to IEEE Std 765 in IEEE Std 308. During the review, several technical questions were transmitted to BNI.[3] BNI responded to the questions by committing to keep the reference to IEEE Std 765 in IEEE Std 308.[4]

Evaluation (not applicable):

3.3.4 Proposed change: "Pages 4-5, Section 3.0 References, The following reference standards (and respective footnotes) apply for the RPP-WTP":

3.3.4.1 Proposed change: DOE/RL-96-0006, Revision 2, *Top-Level Radiological, Nuclear and Process Safety Standards and Principles for Contractor.*

[3] ORP letter from R. C. Barr to R. F. Naventi, BNI, "Questions on the Authorization Basis Change Notice 24590-WTP-ABCN-ESH-02-003, Rev. 0, Tailoring of IEEE Standard," 02-OSR-0237, dated June 6, 2002.
[4] BNI letter from A. R. Veirup to M. K. Barrett, ORP, "Closeout Comments on Low Activity Waste Construction Authorization Requests," CCN 035137, dated July 10, 2002.

Evaluation (acceptable): The revision is acceptable because DOE/RL-96-0006, Revision 2, *Top-Level Radiological, Nuclear and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor* is a regulatory basis document for the RPP-WTP.

3.3.4.2 Proposed change: ANSI/ISA-S84.01-1996, Application of Safety Instrument Systems for the Process Industries.

Evaluation (acceptable): The revision is acceptable because ANSI/ISA-S84.01-1996, Application of Safety Instrument Systems for the Process Industries replaces IEEE-603 on the RPP-WTP, via ABCN 24590-WTP-ABCN-ESH-01-027.

3.3.5 Proposed change: "Pages 4-5, Section 3.0 References." "The following standards are listed in the SRD with revision dates that are different from the latest revision of the standards. The revision of the standard listed in the SRD shall be used for RPP-WTP:

3.3.5.1 Proposed change: IEEE Std-379-1994, IEEE Standard Application of the Single-Failure Criterion to Nuclear Power Station Safety Systems.

Evaluation (acceptable): The change is acceptable because it adds clarification.

3.3.5.2 Proposed change: IEEE Std-384-1992, IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits, (ANSI).

Evaluation (acceptable): The change is acceptable because it adds clarification.

3.3.5.3 Proposed change: IEEE Std-485-1083, IEEE Recommended Practice for Sizing Large Lead Storage Batteries for Generating Station and Substations, (ANSI).

Evaluation (acceptable): The change is acceptable because it adds clarification.

3.3.5.4 Proposed change: IEEE Std-741-1990, IEEE Standard Criteria for the Protection of Class 1E Power Systems and Equipment in Nuclear Power Generating Stations.

Evaluation (acceptable): The change is acceptable because it adds clarification.

3.3.6 Proposed change: "Pages 5-6, Section 4.0, Definitions":

3.3.6.1 Proposed change: Replace definition of administrative controls with: “Provisions relating to organization and management, procedures, record keeping, assessment, and reporting necessary to ensure safe operation of the facility.”

Evaluation (acceptable): The revision is acceptable because the definition of administrative controls, "Provisions relating to organization and management, procedures, record keeping, assessment, and reporting necessary to ensure safe operation of the facility" is from Appendix B of the SRD, Volume II.

3.3.6.2 Proposed change: Replace definition of design basis events with the following: "Postulated events providing bounding conditions for establishing the performance requirements of structures, systems, and components that are necessary to: (1) ensure the integrity of the safety boundaries protecting the worker; (2) place and maintain the facility in a safe state indefinitely; or (3) prevent or mitigate the event consequences so that the radiological exposures to the general public or the workers would not exceed appropriate limits. The Design-Basis Events also establish the performance requirements of the structures, systems and components whose failure under Design-Basis Event conditions could adversely affect any of the above functions."

Evaluation (acceptable): The revision is acceptable because the revised definition of design basis events is consistent with the definition of 'safety function" from DOE/RL-96-0006.

3.3.6.3 Proposed change: Delete the clause, "of a unit, other that reactor trip or those used for only normal operation" for the definition of engineered safety features.

Evaluation (acceptable): The revision is acceptable because the definition of engineered safety features is clarified by deletion of the clause, "of a unit, other that reactor trip or those used for only normal operation." The clause does not have meaning for application to the RPP-WTP.

3.3.6.4 Proposed change: Replace definition of "Nuclear power generating station" with "The RPP-WTP."

Evaluation (acceptable): The revision is acceptable because the definition of nuclear power generation station, "The RPP-WTP," clarifies how the term applies to the RPP-WTP.

3.3.6.5 Proposed change: Replace definition of safety function with the following: "Any function that is necessary to ensure: (1) the integrity of the SDC/SDS boundaries retaining the radioactive materials, (2) the capability to place and maintain the facility in a safe state such that SDC/SDS functions are maintained as needed; or (3) the capability to prevent or mitigate the consequences of facility conditions that could result in radiological exposure to the general public or workers in excess of SDC/SDS limits."

Evaluation (conditionally acceptable): The proposed change is unacceptable because the definition proposed is inconsistent with that contained in Top-Level Standards, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor,* DOE/RL-96-0006. In a telephone communication between BNI staff and OSR staff,[5] BNI staff requested to modify the proposed change to replace the definition of safety function with the exact definition of safety function as it appears in Top-Level Standards. This proposed change is conditionally acceptable based on the

[5] Ibid 2.

definition for safety function to be replaced with the exact definition of safety function as it appears in Top-Level Standards.

3.3.6 Proposed change: Replace definition of safety system with: "A SDC/SDS system, as determined in the ISM review process."

Evaluation (acceptable): The proposed change is acceptable because IEEE Std 308-1991 is only referenced from SRD Safety Criterion 4.4-9 for SDC Electrical SSCs.

3.3.6.7 Proposed change: Replace the word "station" with "RPP-WTP" for the definition of significant.

Evaluation (acceptable): The revision to replace the word 'station" with "RPP-WTP" for the definition of significant is acceptable because the word station could be misconstrued to apply only to a nuclear power generation station.

3.3.6.8 Proposed change: Replace definition of "Unit" with "The RPP-WTP."

Evaluation (acceptable): The revision is acceptable because the definition of Unit, "The RPP-WTP" adequately describes the site. The RPP-WTP is a singularly licensed nuclear site (Waste Treatment Plant) with multiple buildings (facilities). There is no need for a multiple unit assessment as required in IEEE Std 308-1991. The contractor response lists acceptable Consensus Standards and daughter Standards for implementation specific to Safety Criterion 4.4-9.

3.3.6.9 Proposed change: Add reference to the location of definitions for SDC and SDS in the SRD.

Evaluation (acceptable): The revision is acceptable because the definitions: Safety Design Class (SDC), "The definition for SDC is provided in Safety Criterion 1.0-8 of the SRD"; and Safety Design Significant (SDS), "The definition for SDC is provided in Safety Criterion 1.0-8 of the SRD," apply to the classification of structures, systems, and components on the RPP-WTP.

3.3.7 Proposed change: "Page 7, Section 5.2, Relationship Between the Safety System and Class 1E Power System." The revision is to replace this section with, "The SDC/SDS power distribution system shall, as a minimum, meet the criteria called out in this standard and ISA-S84.01-1996. The SDC/SDS power distribution system will be designed to ensure that the safety systems supported by the SDC/SDS power distribution system will be able to perform their safety functions during and following design basis events"

Evaluation (acceptable): This revision is acceptable because Standard ISA-S84.01-1996 is being used in place of IEEE-603, per ABCN 24590-WTP-ABCN-ESH-01-027.

3.3.8 Proposed change: "Page 11, Section 5.6, Location of Indicators and Control." The revision is to replace this section with, "SDC/SDS Power distribution system controls will be automated and indication of the safety functions shall be provided in the respective facility control room. Manual control and indication shall be provided outside the facility control rooms."

Evaluation (acceptable): is acceptable because the nomenclature is tailored for RPP-WTP to add clarity.

3.3.9 Proposed change: "Page 11, Section 5.7, Identification." The revision is to delete the second sentence, "All documents shall be identified in accordance with the requirements of IEEE Std 494-1974 [13]."

Evaluation (acceptable): The change is acceptable because the IEEE standards committee has withdrawn IEEE Std 494 and no replacement standard has been recommended.

3.3.10 Proposed change (withdrawn): "Pages 11-12, Section 5.10, Single Failure Criterion." The revision is to add the sentence, "The probabilistic assessment will be performed by ES&H during the ISM review cycle," to the third paragraph. This proposed change shall be modified by BNI. During the review, several technical questions were transmitted to BNI.[6] BNI responded to the questions by withdrawing the proposed change.[7]

Evaluation (not applicable)

3.3.11 Proposed change: "Page 12, Section 5.13, Circuits That Penetrate Containment." The change is that requirements for circuits that penetrate containment are deemed not applicable for RPP-WTP.

Evaluation (acceptable): It is acceptable that this section is "Not applicable for the RPP-WTP," because Containment penetration assemblies are unique to the containment structure of Nuclear Power Generating Stations and have no equivalent in the RPP-WTP project.

3.3.12 Proposed change (withdrawn): "Page 13, Section 6.2.3, Preferred Power Supply." The requirements of this section have been deleted as applicable to RPP-WTP. During the review, several technical questions were transmitted to BNI.[8] BNI responded to the questions by withdrawing the proposed change.[9].

Evaluation (not applicable)

[6] Ibid 3.
[7] Ibid 4.
[8] Ibid 3.
[9] Ibid 4.

3.3.13 Proposed change: The proposed change of "Page 16, Section 6.4, Instrumentation and Control Power Systems" will be modified by BNI as described below. During the review, several technical questions were transmitted to BNI.[10] BNI responded to the questions with proposed changes to the ABCN, which were submitted to ORP on July 10, 2002.[11] The change will be revised to replace sub-section 6.4.1 of IEEE-308 with the following:

"The instrumentation and control power systems (ICPS) include power supplies and distribution systems arranged to provide alternating and direct power to the SDC/SDS instrumentation and control, (I&C) loads.

These systems shall be designed to provide highly reliable sources of power to the Programmable Protection System, (PPS) and to SDC/SDS instrumentation and control power systems not integral to the PPS.

Design requirements shall include the following:

1) The SDC/SDS I&C loads shall be distributed between two or more redundant power supplies.

2) The protective actions of each load group shall be independent of the protective actions provided by redundant load groups.

3) An independent direct current power supply shall be provided for the each SDC power distribution system load group.

4) Two or more independent alternating current power supplies shall be provided for instrumentation and control.

To accomplish the above requirements, special power supplies may be required that are isolated from the alternating current and direct current power supplies used for normal instrumentation and control of the RPP-WTP."

Evaluation (conditionally acceptable): The proposed change is acceptable because IEEE Std 308-1991 is only referenced from SRD Safety Criterion 4.4-9 for SDC Electrical SSCs. The loads tailored in the text for IEEE Std 308 fully envelope SDC I&C loads. The acceptance of this change is conditioned upon BNI modifying the proposed change as indicated above.

3.3.14 Proposed change: "Page 17, Section 6.5.1, General, (Execute Features)." The revision is to replace the last sentence with, "The execute features will be subject to the functional and design requirements in ISA-S84.01, [21] and the requirements called out during the ISM cycle process."

[10]Ibid 4.
[11]Ibid 3.

Evaluation (acceptable): The proposed revision is acceptable because Standard IEEE-603 is being replaced by ISA-S84.01, Per 24590-WTP-ABCN-ESH-01-027.

3.3.15 Proposed change: "Page 17, Section 6.5.2, Manual Control." The revision is to delete line three and replace with, "Be shown by analysis not to defeat the requirements in ISA-S84.01, [21] as well as the requirements called out during the ISM cycle process."

Evaluation (acceptable): The revision is acceptable because Standard IEEE-603 is being replaced by ISA-S84.01, per ABCN 24590-WTP-ABCN-ESH-01-027.

3.3.16 Proposed change: "Page 20, Section 7.3, Pre-operational System Test." The revision is to delete reference to IEEE Std 415.

Evaluation (acceptable): The revision is acceptable because this standard has been withdrawn by the IEEE standards committee, no replacement standard has been recommended, and procedures for pre-operational testing programs shall be developed internally for the RPP-WTP project.

3.3.17 Proposed change: "Pages 20-21, Section 8.0, Multiunit Station Considerations." The revision is to delete the requirements of Section 8.0 regarding multiunit station considerations.

Evaluation (acceptable): It is acceptable that this section is "Not applicable for the RPP-WTP," because the RPP-WTP is a singularly licensed nuclear site (Waste Treatment Plant) with multiple buildings (facilities). There is no need for a multiple unit assessment as required in IEEE Std 308-1991. The contractor response lists acceptable Consensus Standards and daughter Standards for implementation specific to Safety Criterion 4.4-9.

3.4 Proposed changes to SRD, Volume II, Appendix C: Addition of a proposed new section, "x.0 C, IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits," "RPP-WTP Specific Tailoring," "The following tailoring of IEEE-384 is required for use by the RPP-WTP project as an implementing standard for the SDC/SDS electrical equipment and circuit design."

3.4.1 Proposed change: "Pages 1-21, All Sections, Clarification of Nuclear Power Generating Station Terminology." The term “Standby Generator” in the Standard is defined to be synonymous with “Emergency Generator” in the RPP-WTP.

Evaluation (acceptable): It is acceptable that "the term “Standby Generator” in the Standard is synonymous with “Emergency Generator” in the RPP-WTP" because Emergency Generators are classified as SDC on the RPP-WTP. In IEEE standards for 1E equipment Standby Generators are class 1E. Standby Generators at the RPP-WTP are not ITS and do not support ITS systems or components.

3.4.2 Proposed change: "Page 1, Section 2.0, Purpose." Delete the reference to IEEE-603.

Evaluation (acceptable): The change is acceptable to because Standard ISA-S84.01-1996 is being used in place of IEEE-603 per 24590-WTP-ABCN-ESH-01-027.

3.4.3 Proposed change: "Page 1, Section 3.0, References," "The following reference standards, do not apply for the RPP-WTP":

3.4.3.1 Proposed change: The referenced standard, "ANSI/ANS-58.2-1988, Design Basis for Protection of Light Water Nuclear Power Plants Against the Effects of Postulated Pipe Rupture," does not apply to the RPP-WTP.

Evaluation (acceptable): The change is acceptable for because this document is applicable to high pressure steam lines found in nuclear power generating stations and inapplicable to the RPP-WTP.

3.4.3.2 Proposed change: The referenced standard, "ANSI/NFPA 803-1988, Fire Protection for Light Water Nuclear Power Plants," does not apply to the RPP-WTP."

Evaluation (acceptable): The change is acceptable because this document is applicable to nuclear power generating stations. Per section 4.5 of volume II of the SRD, the RPP-WTP will use NFPA-801-95 as an implementing standard for fire protection

3.4.3.3 Proposed change: The referenced standard, "IEEE Std 494-1974 (reaff 1990), IEEE Standard Method for Identification of Documents Related to Class 1E Equipment and Systems for Nuclear Power Generating Stations," does not apply to the RPP-WTP.

Evaluation (acceptable): The change is acceptable because IEEE Std 494 has been withdrawn by the IEEE standards committee and no replacement standard has been recommended.

3.4.3.4 Proposed change: The referenced standard, "IEEE Std 603-1991, IEEE Standard Criteria for Safety Criteria for Safety Systems for Nuclear Power Generating Stations," does not apply to the RPP-WTP.

Evaluation (acceptable): The change is acceptable for the referenced standard, because this standard is being replaced by ANSI/ISA-S84.01-1996, per ABCN 24590-WTP-ABCN-ESH-01-027.

3.4.4 Proposed change: "Page 1, Section 3.0, References," "The following reference standards apply for the RPP-WTP":

3.4.4.1 Proposed change: The referenced standard, "DOE/RL-96-0006, Revision 2, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor*," is to be included in the references of IEEE-384.

Evaluation (acceptable): The change is acceptable because providing traceability back to bases documents provides clarity.

3.4.4.2 Proposed change: The referenced standard, "ANSI/ISA-S84.01-1996, Application of Safety Instrument Systems for the Process Industries" is to be included in the references of IEEE-384.

Evaluation (acceptable): The change is acceptable because it replaces IEEE-603 per ABCN 24590-WTP-ABCN-ESH-01-027.

3.4.4.3 Proposed change: The referenced standard, "NFPA 801-1995, Standard for Facilities Handling radioactive Materials," is to be included in the references of IEEE-384.

Evaluation (acceptable): The change is acceptable for the referenced standard, because it's called out as an implementing standard under SRD Volume II, Section 4.5 and NFPA-803 is not used as an implementing standard.

3.4.5 Proposed change: "Pages 2-3, Section 4.0, Definitions." "The following change apply to the definitions."

3.4.5.1 Proposed change: The proposed change will be modified by BNI. During the review, several technical questions were transmitted to BNI.[12] BNI responded to the questions with additional changes to the ABCN, which were submitted to ORP on July 10, 2002.[13] In the response to questions BNI committed to modify the Note that follows the definition of associated circuits with the following:

"Note – Circuits include the interconnecting cabling and connected loads. This definition will apply to circuits meeting the following criteria:

- The only Non-SDC circuits that would be associated with SDC circuits would be those circuits classified as SDS. Such circuits shall meet the criteria called out in section 5.5 of IEEE 384-1992.

- There will not be any non-SDS circuits associated with SDS circuits other than the ones described in the first bullet.

- SDS circuits associated with SDC circuits shall be subject to the criteria called out in section 5.5 of IEEE 384-1992."

Evaluation (conditionally acceptable): It is acceptable to replace the note that follows the definition of **associated circuits** with the above, because it provides clarification on how circuits of different safety classifications are tailored for this standard. The acceptance of this change is contingent on BNI revising the change as described above.

3.4.5.2 Proposed change: The definition of **design basis events** is to be replaced with, "Postulated events providing bounding conditions for establishing the performance requirements of structures, systems, and components that are necessary to: (1) ensure the

[12]Ibid 3.
[13]Ibid 4.

integrity of the safety boundaries protecting the worker; (2) place and maintain the facility in a safe state indefinitely; or (3) prevent or mitigate the event consequences so that the radiological exposures to the general public or the workers would not exceed appropriate limits. The Design-Basis Events also establish the performance requirements of the structures, systems and components whose failure under Design-Basis Event conditions could adversely affect any of the above functions."

Evaluation (acceptable): This change is acceptable because it clarifies the term as it is applied to RPP-WTP and is traceable to DOE/RL-96-0006.

3.4.5.3 Proposed change: "Pages 2-3, Section 4.0, Definitions," The definitions for Safety Design Class and Safety Design Significant provided in Safety Criterion 1.0-8 of the SRD shall be added.

Evaluation (acceptable): The revision is acceptable because the definitions: Safety Design Class (SDC), "The definition for SDC is provided in Safety Criterion 1.0-8 of the SRD"; and Safety Design Significant (SDS), "The definition for SDC is provided in Safety Criterion 1.0-8 of the SRD," apply to the classification of structures, systems, and components on the RPP-WTP.

3.4.6 Proposed change: "Page 3, Section 5.3, Equipment and Circuits Requiring Independence." Replace the section with, "Equipment and circuits requiring independence shall be determined during the ISM review cycle." During the review, several technical questions were transmitted to BNI.[14] BNI responded to the questions by stating in a letter dated July 10, 2002, to ORP,[15] that modifications would be made to the proposed change. The proposed change would be modified to: "Equipment and circuits requiring independence shall be determined during the ISM review cycle and shall be identified on documents and drawings in a distinctive manner."

Evaluation (conditionally acceptable): The change is acceptable provided BNI modifies the proposed change as described above.

3.4.7 Proposed change (withdrawn): "Page 8, Section 6.1.2, Identification." The proposed change has been withdrawn by BNI. During the review, several technical questions were transmitted to BNI.[16] BNI responded to the questions by withdrawing the proposed change.[17]

Evaluation (not applicable):

3.4.8 Proposed change: "Page 9, Section 6.1.3.2, Area Boundaries." The revision is to, "Replace the reference to NFPA-803-1988 [4] with NFPA-801-1995 [19]."

[14] Ibid 3.
[15] Ibid 4.
[16] Ibid 3.
[17] Ibid 4.

Evaluation (acceptable): The change is acceptable because Standard NFPA-803-1998 is not applicable for the RPP-WTP. Per section 4.5 of the SRD, NFPA-801-1995 shall be used for the RPP-WTP.

3.4.9 Proposed change: "Page 15, Section 6.5, Containment Electrical Penetrations." This section is not applicable for the RPP-WTP.

Evaluation (acceptable): This change is acceptable because the RPP-WTP project doesn"t have a containment structure.

3.5 Proposed changes to SRD, Volume II, Appendix C: Addition of a proposed new section, "x.0 C, IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits," "RPP-WTP Specific Tailoring," "The following tailoring of IEEE-338 is required for use by the RPP-WTP project as an implementing standard for the SDC/SDS system design and operation."

Evaluation (conditionally acceptable): IEEE-338 is an implementing standard for several safety criterion, including Safety Criterion: 4.4-4. Safety Criterion 4.4-4 is applicable to Important to Safety SSCs in general and is not limited to SDC/SDS system design and operation. The proposed change is acceptable only if "SDC/SDS" is replaces with "Important to Safety."

3.5.1 Proposed change: "Page 1, Section 1.0 Scope." The referenced standard, "ANSI/ISA-S84.01-1996, Application of Safety Instrument Systems for the Process Industries," is to be included in the references of IEEE-338.

Evaluation (acceptable): The change is acceptable because ANSI/ISA-S84.01-1996, replaces IEEE-603 on the RPP-WTP, per ABCN 24590-WTP-ABCN-ESH-01-027.

3.5.2 Proposed change: "Pages 1-2, Section 2.1, Definitions." The change is to replace the definition for 'safety function" with, "Safety Function. Any function that is necessary to ensure: (1) the integrity of the SDC/SDS boundaries retaining the radioactive materials, (2) the capability to place and maintain the facility in a safe state such that SDC/SDS functions are maintained as needed; or (3) the capability to prevent or mitigate the consequences of facility conditions that could result in radiological exposure to the general public or workers in excess of SDC/SDS limits."

Evaluation (conditionally acceptable): The proposed change is unacceptable because the definition proposed is inconsistent with that contained in Top-Level Standards, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor,* DOE/RL-96-0006. In a telephone communication between BNI staff and OSR staff,[18] BNI staff requested to modify the proposed change to replace the definition of safety function with the exact definition of safety function as it appears in Top-Level Standards. This proposed change is conditionally acceptable based on the

[18] Ibid 2.

definition for safety function to be replaced with the exact definition of safety function as it appears in Top-Level Standards.

3.5.3 Proposed change: "Pages 2-3, Section 3.0 References," "The following reference standards (and respective footnotes) do not apply for the RPP-WTP."

3.5.3.1 Proposed changes: Delete reference to "IEEE Std 603-1980, IEEE Standard Criteria for Safety Criteria for Safety Systems for Nuclear Power Generating Stations."

Evaluation (acceptable): The change is acceptable because this standard is being replaced by ANSI/ISA-S84.01-1996, per ABCN 24590-WTP-ABCN-ESH-01-027.

3.5.3.2 Proposed changes: Delete reference to "ANSI/IEEE/ANS 7-4.3.2-1982, Application Criteria for Programmable Digital Computer systems in Safety Systems of Nuclear Power Generating Stations."

Evaluation (acceptable): The change is acceptable because its mother document IEEE Std 603-1991 is being replaced by ANSI/ISA-S84.01-1996, per ABCN 24590-WTP-ABCN-ESH-01-027.

3.5.4 Proposed change: "Pages 2-3, Section 3.0 References," "The following reference Standard shall be included."

3.5.4.1 Proposed change: "ANSI/ISA-S84.01-1996, Application of Safety Instrument Systems for the Process Industries," in the references of IEEE-338.

Evaluation (acceptable): The change is acceptable because it replaces IEEE-603 per ABCN 24590-WTP-ABCN-ESH-01-027.

3.5.4.2 Proposed change: Include reference to the referenced standard, "DOE/RL-96-0006, Revision 2, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor*."

Evaluation (acceptable): The change is acceptable because the DOE/RL-96-0006 is a regulatory basis document.

3.5.4.3 Proposed change: "The following reference Standard revision shall be used in compliance with the SRD": "IEEE Std 308-1991, Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations," revision to be referenced in IEEE-338.

Evaluation (acceptable): It is acceptable for the referenced standard, "IEEE Std 308-1991, Standard Criteria for Class 1E Power Systems for Nuclear Power Generating Stations," revision to be referenced in IEEE-338 because this is the revision currently referenced in the SRD.

3.5.5 Proposed change: "Page 4, Section 5.0 Design Requirements." The term “main control room” shall mean the respective facility control rooms for the RPP-WTP project" in paragraph seven because the RPP-WTP project does not have a single control room like a nuclear power generating station.

Evaluation (acceptable): This change is acceptable because each facility has its own control room.

3.5.6 Proposed change: "Page 5, Section 6.1 General Consideration." Replace the term “reactor operation” with 'system operation” in paragraph two.

Evaluation (acceptable): The change is acceptable to because the term “reactor operation” is specific to a nuclear power generating station.

3.6 Proposed changes to SRD, Volume II, Appendix C: Addition of a proposed new section, "x.0 C, IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits," "RPP-WTP Specific Tailoring," "The following tailoring of IEEE-628 is required for use by the RPP-WTP project as an implementing standard for the SDC/SDS raceway design."

3.6.1 Proposed change: "Pages 1-2, Section 3.0 Definitions," "The following definitions shall be included."

3.6.1.1 Proposed change: Include the definition, "**Safe Shutdown Earthquake (SSE)**: A natural phenomena hazard, (NPH) earthquake for RPP-WTP and the applicability to systems, structures and components, (SSCs). Criteria for this event is contained in 24599-WTP-SRD-ESH-01-001-02, Safety Requirements Document, (SRD) Volume II, Safety Criterion 4.1-3 and 4.1-4.

Evaluation (acceptable): The change is acceptable because it clarifies applicability of this standard to the RPP-WTP project.

3.6.1.2 Proposed change: Include the definition, "**Safety Design Class, (SDC)**: The definition for SDC is provided in Safety Criterion 1.0-8 of the SRD."

Evaluation (acceptable): The change is acceptable because it clarifies applicability of this standard to the RPP-WTP project.

3.6.1.3 Proposed change: Include the definition, "**Safety Design Significant, (SDS)**: The definition for SDC is provided in Safety Criterion 1.0-8 of the SRD."

Evaluation (acceptable): The change is acceptable because it clarifies applicability of this standard to the RPP-WTP project.

3.6.2 Proposed change: "Pages 4-5, Section 4.0 References"

3.6.2.1 Proposed change: Include these sentences to the front of References: "This standard shall be used in conjunction with the latest version of the following standards. If the referenced standard is listed in the SRD as an implementing standard, then the version of the standard listed in the SRD shall be used."

Evaluation (acceptable): The change is acceptable because the implementing standard listed in the SRD is the basis for design of RPP-WTP.

3.6.2.2 Proposed change: "The following reference standard does not apply for the RPP-WTP." Exclude the referenced standard, "IEEE Std-634-1978, IEEE Standard Cable Penetration Fire Stop Qualification Test."

Evaluation (acceptable): The change is acceptable because the IEEE standards committee has withdrawn this standard and no replacement standard has been recommended. Per 24590-WTP-SRD-ESH-01-001-02, Safety Requirements Document, (SRD) Volume II, Section 4.5, the implementing fire protection standard for the RPP-WTP will be NFPA 801. Fire stop qualification tests shall be per the Factory Mutual standards.

3.6.2.3 Proposed change: "The following reference Standard shall be included": "NFPA 801-1995, Standard for Facilities Handling radioactive Materials."

Evaluation (acceptable): The change is acceptable because it is an implementing standard per 24590-WTP-SRD-ESH-01-001-02, Safety Requirements Document, (SRD) Volume II, Section 4.5, safety criteria 4.5-1 through 4.5-23.

3.6.3 Proposed change: "Pages 4-5, Section 4.0 References," "The following standards are listed in the SRD with revision dates that are different from the revisions dates listed in the standard. The following revisions of the below standards shall be used in place of the revisions referenced in the body IEEE-638."

3.6.3.1 Proposed Change: "ANSI/ACI 349-97, Code Requirements for Nuclear Safety-Related Concrete Structures."

Evaluation (acceptable): This change is acceptable because this is the revision currently referenced in the SRD.

3.6.3.2 Proposed Change: "ANSI/ASME NQA-1-1989 Quality Assurance Program Requirements for Nuclear Facilities."

Evaluation (acceptable): This change is acceptable because this is the revision currently referenced in the SRD.

3.6.3.3 Proposed Change: "IEEE Std-344-1987, IEEE Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations."

Evaluation (acceptable): This change is acceptable because this is the revision currently referenced in the SRD.

3.6.3.4 Proposed Change: "IEEE Std-384-1992, IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits."

Evaluation (acceptable): This change is acceptable because this is the revision currently referenced in the SRD.

3.6.3.5 Proposed Change: "NFPA70-1999, National Electric code."

Evaluation (acceptable): This change is acceptable because it is consistent with ABCN 24590-WTP-ABCN-ESH-01-025.

3.6.4 Proposed change: "Page 4, Section 5.1, General, (Design)." The change is to delete the seventh paragraph and replace with, "Raceways that penetrate a fire barrier shall have fire stops installed in accordance with NFPA 801-1995. Fire stops will utilize UL-listed and/or Factory Mutual-approved assemblies with a fire rating equal to or greater than the rating of the fire barrier."

Evaluation (acceptable): The change is acceptable because NFPA 801 is an implementing standard for fire protection in the RPP-WTP, per 24590-WTP-SRD-ESH-01-001-02, Safety Requirements Document, (SRD) Volume II, Section 4.5. The IEEE standards committee has withdrawn IEEE 634-1978 and no replacement standard has been recommended. Since IEEE-690 references IEEE-634, it was deleted from the paragraph as well.

3.6.5 Proposed change: "Page 5, Section 5.6, Environmental Consideration." The change is to delete the second paragraph, “To meet the requirements of combustible gas control, materials for raceway systems to be installed in containment shall be selected with due consideration to minimizing the generation of hydrogen gas following a design basis accident.”

Evaluation (acceptable): It is acceptable to delete the second paragraph because the requirement for raceway systems installed in containment is specific to nuclear power generating stations and does not have an equivalent application to the RPP-WTP.

3.6.6 Proposed change: Page 11, Delete Section 5.10.1.1.5, Operating Basis Earthquake, (OBE) Loads.

Evaluation (acceptable): This change is acceptable because OBE loads have been determined to be not applicable to the RPP-WTP per ABCN 24590-WTP-ABCN-ESH-01-013.

3.6.7 Proposed change: "Page 11, Section 5.10.1.2, Load Combinations." The change is to clarify that OBE and SRV loads are not applicable to the RPP-WTP.

Evaluation (acceptable): This change is acceptable because OBE has been determined to be not applicable to the RPP-WTP per 24590-WTP-ABCN-ESH-01-013. As stated in IEEE-628 section 5.10.1.1.4, SRV loads only apply to BWR nuclear power generating stations and therefore do not apply to the RPP-WTP.

3.7 Proposed changes to SRD, Volume II, Appendix C: Addition of a proposed new section, "x.0 C, IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits," "RPP-WTP Specific Tailoring," "The following tailoring of IEEE-344 is required for use by the RPP-WTP project as an implementing standard for SDC/SDS electrical and instrument system design."

3.7.1 Proposed change: "Pages 1-43, All Sections, Clarification of Nuclear Power Generating Station Terminology." The change states that, "The term “Class 1E” in the Standard applies to “SC-1 SDC” in the RPP-WTP."

Evaluation (acceptable): The change is acceptable because for RPP-WTP the equipment that needs to function during and after an NPH earthquake is SDC equipment which must be qualified to SC1. Section 1.0 (Scope), of IEEE-344 applies to equipment that needs to function during and after an SSE for a Nuclear Power Generating Station.

3.7.2 Proposed changes: "Page 1, Section 1.2 References." The change deletes the reference CFR (Code of Federal Regulations), Title 10: Energy, Part 100, Reactor Site Criteria, published by office of the Federal Register, 1992.

Evaluation (acceptable): The change is acceptable because it contains radiation dose criteria and seismic criteria for Nuclear Power Generating Stations and is not applicable to the RPP-WTP project. The applicable criteria for RPP-WTP is found in 24590-WTP-SRD-ESH-01-001-02, Safety Requirements Document (SRD) Volume II, Safety Criteria 2.0-1 for radiological dose and 2.0-2 for chemical hazards. The applicable seismic criteria is contained in 24590-WTP-SRD-ESH-01-001-02, Safety Requirements Document (SRD) Volume II, in section 4.1 General Design, Safety Criterion 4.1-3 and 4.1-4. These Safety Criterion define Seismic Classes (SC) I, II and III and provide seismic loads and source documents.

3.7.3 Proposed change: "Pages 1-2, Section 2, Definitions." The change is to delete the definitions for Operating basis earthquake (OBE) and safe shutdown earthquake (SSE) and to add the definition, "natural phenomena hazard (NPH) earthquake: Earthquakes for RPP-WTP and the applicability to systems, structures and components (SSCs) is contained in 24590-WTP-SRD-ESH-01-001-02, Safety Requirements Document (SRD) Volume II, in section 4.1 General Design, Safety Criterion 4.1-3 and 4.1-4. These Safety Criterion define Seismic Classes (SC) I, II and III and provide seismic loads and source documents."

Evaluation (acceptable): The change is acceptable because it is a pointer to the SRD definition for applicability to RPP-WTP. This is consistent with the tailoring of AISC N690 as documented in ABCN 24590-WTP-ABCN-ESH-01-013.

3.7.4 Proposed change: "Pages 1-43, All Sections, Clarification of OBE and SSE." The change is to delete the requirement to apply and document the loads of a number of OBEs before an SSE from the standard, and to treat the term SSE in the standard as an NPH earthquake.

Evaluation (acceptable): The change is acceptable because the earthquake applicable to RPP-WTP is the NPH earthquake. This is consistent with the tailoring of AISC N690 as documented in ABCN 24590-WTP-ABCN-ESH-01-013.

3.7.5 Proposed change: "Page 13, Section 7.1.3.2, Repairs." The change is to delete the words, ," such as LOCA," from the fifth line.

Evaluation (acceptable): The change is acceptable because LOCA is a term specific to Nuclear Power Generating Stations and not to the RPP-WTP project.

3.7.6 Proposed change: "Page 15, Section 7.1.5, Vibrational Aging." The change is to the first sentence in the last paragraph which will read, "The purpose of the vibrational aging is to show that the lower levels of normal and transient vibration associated with plant operation will not adversely affect an equipment's performance of its safety function nor cause any condition to exist that, if undetected, would cause failure of such performance during a subsequent NPH earthquake."

Evaluation (acceptable): The change is acceptable because the rewording is needed to clarify the meaning of the sentence. This sentence within the standard included additional vibration aging of an OBE, but used the terms “lower intensity earthquake” rather than OBE. The requirement to subject equipment to several OBEs prior to an SSE is not included in the requirements of the SRD for the RPP-WTP project. The earthquake applicable to RPP-WTP is the NPH earthquake. This is consistent with the tailoring of AISC N690 as documented in ABCN-013.

3.7.7 Proposed change: "Page 16, Section 7.1.6.1, Hydrodynamic Loads." The change is to delete the words, "and the loss-of-coolant accident (LOCA)."

Evaluation (acceptable): The change is acceptable to because LOCA is a term specific to Nuclear Power Generating Stations and not to the RPP-WTP project.

3.8 Proposed changes to SRD, Volume II, Appendix C: Addition of a proposed new section, "x.0 C, IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits," "RPP-WTP Specific Tailoring." "The following tailoring of IEEE-323 is required for use by the RPP-WTP project as an implementing standard for SDC/SDS electrical and instrument system design."

Evaluation (conditionally acceptable): IEEE-323 is an implementing standard for Safety Criterion: 4.4-2. Safety Criterion 4.4-2 is applicable to Important to Safety SSCs in general and is not limited to SDC/SDS system design and operation. The proposed change is acceptable only if “SDC/SDS” is replaces with “Important to Safety."

3.8.1 Proposed change: "Pages 1-2, Section 2, References." The change is to include the referenced standard, "DOE/RL-96-0006, Revision 2, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor*," in the references of IEEE-323.

Evaluation (acceptable): The change is acceptable because providing traceability back to bases documents provides clarity.

3.8.2 Proposed change: "Pages 2-3, Section 3, Definitions." The change is to modify the definition of harsh environment to be, "harsh environment: An environment expected as the result of the postulated service condition appropriate for the design basis event of the RPP-WTP. It is an environment that exceeds the conditions of a mild environment. Equipment that do not experience an environment beyond a mild environment during a design basis event can be considered to be in a mild environment."

Evaluation (acceptable): The change is acceptable because the existing definition applies to a Nuclear Power Generating Station and are the result of a loss of cooling accident (LOCA)/ high energy line brake (HELB) inside the containment and post-LOCA or HELB outside containment. This modified definition is further supported by 10CFR 50.49, Environmental qualification of electric equipment important to safety for nuclear power plants, which states, in section C: "Requirements for (1) dynamic and seismic qualification of electric equipment important to safety, (2) protection of electric equipment important to safety against other natural phenomena and external events, and (3) environmental qualification of electric equipment important to safety located in a mild environment are not included within the scope of this section. A mild environment is an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation, including anticipated operational occurrences." The definition of mild environment within the standard states: "An environment expected as a result of normal service conditions and extremes (abnormal) in service conditions where seismic is the only design basis event (DBE) of consequences." Therefore the normal operating environment for a SSC is considered a "mild environment" by this definition.

3.8.3 Proposed changes: "The following definition is applicable for the RPP-WTP." The change is to modify the definition of design basis events to include the definition from DOE/RL-96-0006, "design basis events: Postulated events providing bounding conditions for establishing the performance requirements of structures, systems, and components that are necessary to: (1) ensure the integrity of the safety boundaries protecting the worker; (2) place and maintain the facility in a safe state indefinitely; or (3) prevent or mitigate the event consequences so that the radiological exposures to the general public or the workers would not exceed appropriate limits. The Design-Basis Events also establish the performance requirements of the structures, systems and components whose failure under Design-Basis Event conditions could adversely affect any of the above functions."

Evaluation (acceptable): The change is acceptable because it clarifies the applicability of the term to RPP-WTP.

3.8.4 Proposed changes: "Page 14-15, Section 7, Simulated Test Profiles." The change is to delete Section 7, Simulated Test Profiles.

Evaluation (acceptable): The change is acceptable because this section is specific to Nuclear Power Generating Stations and describes profiles and margin for LOCA/ HELB harsh environments.

3.9 Proposed changes to SRD, Volume II, Appendix C: Addition of a proposed new section, "x.0 C, IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits," "RPP-WTP Specific Tailoring," "The following tailoring of IEEE-379 is required for use by the RPP-WTP project as an implementing standard for SDC/SDS system design and operation."

3.9.1 Proposed changes: "Page 1, Section 1.1 Scope." The change is to rewrite the scope to read, "This document covers the application of the single-failure criterion to the electrical power systems as well as the instrumentation, and control portions of facility safety systems which have not been qualified using the ANSI/ISA S84.01 process." During a meeting between OSR staff an BNI staff,[19] BNI requested the proposed change be modified to: "This document covers the application of the single-failure criterion to the electrical power instrumentation, and control portions of facility safety systems as determined by the ISM Process." The Justification will be modified to: "Application of IEEE-379 to the RPP-WTP project is determined by the ISM Process."

Evaluation (conditionally acceptable): The change acceptable provided BNI modifies the change as indicated above.

3.9.2 Proposed changes: "Page 1, Section 1.2 Purpose." The change is to remove the second paragraph of this section.

Evaluation (acceptable): The change is acceptable because the IEEE standard IEEE Std 603-1991, IEEE Criteria for Safety Systems for Nuclear Power Generating Stations will be replaced by ANSI/ISA-S84.01-1996 via ABCN 24590-WTP-ABCN-ESH-01-027.

3.9.3 Proposed changes: "Pages 1-2, Section 2.0 References."

3.9.3.1 Proposed change: The change is to delete application of the reference standard (and respective footnotes) for the RPP-WTP, "IEEE Std-603-1980, IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations."

Evaluation (acceptable): The change is acceptable because the IEEE standard IEEE Std 603-1991, IEEE Criteria for Safety Systems for Nuclear Power Generating Stations will

[19] Meeting between K. Gibson, and other BNI staff, and W. Pasciak, OSR, on August 27, 2002.

be replaced by ANSI/ISA-S84.01-1996 via a separate change document, 24590-WTP-ABCN-ESH-01-027, being processed concurrently with this revision document.

3.9.3.2 Proposed change: The change is to include the reference standard (and respective footnotes) for the RPP-WTP, "ANSI/ISA 84.01-1996, Application of Safety Instrumented Systems for Process Industries."

Evaluation (acceptable): The change is acceptable because this standard shall cover all of the ITS electrical power and ITS SSC circuits associated with systems designed to ISA S84.01.

3.9.3.3 Proposed change: The change is to include the reference standard (and respective footnotes) for the RPP-WTP, "DOE/RL-96-0006, Revision 2, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor.*"

Evaluation (acceptable): The change is acceptable because providing traceability back to bases documents provides clarity.

3.9.4 Proposed changes: "Pages 1-2, Section 2.1, Definitions," "For WTP, the definitions for the following is contained in DOE/RL-96-0006."

3.9.4.1 Proposed change: The change is to include the following definitions: "Common-Cause Failure. Dependent failures that are caused by a condition external to a system or set of components that make system or multiple component failures more probable than multiple independent failures." and "Design Basis Events. Postulated events providing bounding conditions for establishing the performance requirements of structures, systems, and components that are necessary to: (1) ensure the integrity of the safety boundaries protecting the worker; (2) place and maintain the facility in a safe state indefinitely; or (3) prevent or mitigate the event consequences so that the radiological exposures to the general public or the workers would not exceed appropriate limits. The Design Basis Events also establish the performance requirements of the structures, systems, and components whose failure under Design Basis Event conditions could adversely affect any of the above functions."

Evaluation (acceptable): The change is acceptable because the definitions are from DOE/RL-96-0006.

3.9.4.2 Proposed change: The change is to include the following definition: "Safety Function. Any function that is necessary to ensure: (1) the integrity of the SDC/SDS boundaries retaining the radioactive materials, (2) the capability to place and maintain the facility in a safe state such that SDC/SDS functions are maintained as needed; or (3) the capability to prevent or mitigate the consequences of facility conditions that could result in radiological exposure to the general public or workers in excess of SDC/SDS limits."

Evaluation (conditionally acceptable): The proposed change is unacceptable because the definition proposed is inconsistent with that contained in Top-Level Standards, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for the RPP Waste Treatment Plant Contractor,* DOE/RL-96-0006. In a telephone communication between BNI staff and OSR staff,[20] BNI staff requested to modify the proposed change to replace the definition of safety function with the exact definition of safety function as it appears in Top-Level Standards. This proposed change is conditionally acceptable based on the definition for safety function to be replaced with the exact definition of safety function as it appears in Top-Level Standards.

3.9.5 Proposed changes: "Page 5, Section 5.6 Shared Systems." The change is to remove section 5.6. This section applies single failure criterion at the multi-unit (nuclear generation station) level, providing direction for implementation.

Evaluation (acceptable): The deletion of section 5.6 is acceptable because the facilities are not equivalent to units. Shared ITS systems for the RPP-WTP buildings shall be covered by other sections of this standard.

3.9.6 Proposed changes: "Page 5, Section 6.1 Procedure." The change is, for steps 1-3, to disregard the nuclear power generating station specific examples in the text.

Evaluation (acceptable): It is acceptable to disregard these examples because they are not applicable to the RPP-WTP.

4.0 CONCLUSION

On the basis of the considerations described above, the ORP has concluded that there is reasonable assurance that the health and safety of the public and the workers will not be adversely affected by the proposed changes, and that they comply with applicable laws, regulations, and RPP-WTP contractual requirements. Accordingly, the ORP partially approves the amendment to the SRD as proposed by 24590-WTP-ABCN-ESH-02-003, Revision 0 as indicated above.

[20] Ibid 2.